

WHAT IS CLAIMED IS:

1. A display device comprising:
a substrate having an insulating surface;
a plurality of pixel electrodes formed over said substrate;
a plurality of first n-channel thin film transistors for switching said pixel electrodes;

a driver circuit formed over said substrate for switching said first thin film transistors, said driver circuit comprising a plurality of said second thin film transistors,

wherein all of said second thin film transistors are n-channel thin film transistors.

2. The display device according to claim 1 wherein said display device is a liquid crystal device.

3. The display device according to claim 1 further comprising another driver circuit comprising IC chips for driving said first thin film transistors.

4. A display device comprising:
a substrate having an insulating surface;
a plurality of first lines extending in a first direction over said substrate;
a plurality of second lines extending across said first lines over said substrate;
a plurality of pixels defined by said first lines and said second lines;

a plurality of pixel electrodes provided at said pixels;
a plurality of switching elements provided at said pixels, each of said switching elements comprising at least one first thin film transistor;
a driver circuit formed over said substrate and

electrically connected to said plurality of first lines, said driver circuit comprising a plurality of second thin film transistors, each of said first and second thin film transistors comprising:

a semiconductor film formed over said substrate having at least source, drain and channel regions;

a gate insulating film formed on said semiconductor film; and

a gate electrode over said channel region with the gate insulating film interposed therebetween,

wherein all of the first thin film transistors and the second thin film transistors are NTFTs.

5. The display device according to claim 4 wherein said display device is a liquid crystal device.

6. The display device according to claim 4 further comprising another driver circuit comprising IC chips electrically connected to said plurality of second lines.

7. A display device comprising:

a substrate having an insulating surface;

a plurality of first lines extending in a first direction over said substrate;

a plurality of second lines extending across said first lines over said substrate;

a plurality of pixels defined by said first lines and said second lines;

a plurality of pixel electrodes provided at said pixels;

a plurality of switching elements provided at said pixels, each of said switching elements comprising at least one first thin film transistor;

an interlayer insulating film comprising resin formed over said plurality of switching elements wherein said pixel electrodes are provided over said interlayer insulating film;

a driver circuit formed over said substrate and
electrically connected to said plurality of first lines, said driver
circuit comprising a plurality of second thin film transistors,
wherein all of the first thin film transistors and the second thin
film transistors are NTFTs.

8. The display device according to claim 7 wherein said display
device is a liquid crystal device.

9. The display device according to claim 7 further comprising
another driver circuit comprising IC chips electrically connected to said plurality
of second lines.

10. The display device according to claim 7 wherein said first thin
film transistor has a channel region comprising crystalline silicon and a
concentration of oxygen in said channel region is not higher than 7×10^{19}
atoms/cm³.

11. A display device comprising:
a substrate having an insulating surface;
a plurality of first lines extending in a first direction over said
substrate;
a plurality of second lines extending across said first lines over
said substrate;
a plurality of pixels defined by said first lines and said second
lines;
a plurality of pixel electrodes provided at said pixels;
a plurality of switching elements provided at said pixels, each of
said switching elements comprising at least one first thin film transistor;
a driver circuit formed over said substrate and

electrically connected to said plurality of first lines, said driver circuit comprising a plurality of second thin film transistors, each of said first and second thin film transistors comprising:

a semiconductor film formed over said substrate having at least source, drain and channel regions wherein said semiconductor film contains oxygen at a concentration not higher than 7×10^{19} atoms/cm³;

a gate insulating film adjacent said semiconductor film; and

a gate electrode adjacent said channel region with the gate insulating film interposed therebetween,

wherein all of the first thin film transistors and the second thin film transistors are NTFTs.

12. The display device according to claim 11 wherein said display device is a liquid crystal device.

13. The display device according to claim 11 further comprising another driver circuit comprising IC chips electrically connected to said plurality of second lines.

14. The display device according to claim 11 wherein said gate electrode is located over said channel region.

15. A display device comprising:
a substrate having an insulating surface;
a plurality of first lines extending in a first direction over said substrate;
a plurality of second lines extending across said first lines over said substrate;
a plurality of pixels defined by said first lines and said second lines;
a plurality of pixel electrodes provided at said pixels;

a plurality of switching elements provided at said pixels, each of said switching elements comprising at least one first thin film transistor;

an interlayer insulating film comprising resin formed over said plurality of switching elements wherein said pixel electrodes are provided over said interlayer insulating film;

a driver circuit formed over said substrate and electrically connected to said plurality of first lines, said driver circuit comprising a plurality of second thin film transistors, each of said first and second thin film transistors comprising:

a semiconductor film comprising silicon formed over said substrate having at least source, drain and channel regions;

a gate insulating film formed on said semiconductor film; and

a gate electrode over said channel region with the gate insulating film interposed therebetween,

wherein all of the first thin film transistors and the second thin film transistors are NTFTs.

16. The display device according to claim 15 wherein said display device is a liquid crystal device.

17. The display device according to claim 15 further comprising another driver circuit comprising IC chips electrically connected to said plurality of second lines.

18. The display device according to claim 15 wherein said semiconductor film contains oxygen at a concentration not higher than 7×10^{19} atoms/cm³.

19. A display device comprising:

a substrate having an insulating surface;

a plurality of pixel electrodes formed over said substrate;

a plurality of first n-channel thin film transistors for switching said pixel electrodes;

a driver circuit formed over said substrate for switching said first thin film transistors, said driver circuit comprising a plurality of said second thin film transistors,

wherein all of said second thin film transistors are p-channel thin film transistors.

20. The display device according to claim 19 wherein said display device is a liquid crystal device.

21. The display device according to claim 19 further comprising another driver circuit comprising IC chips for driving said first thin film transistors.

22. A display device comprising:
a substrate having an insulating surface;
a plurality of first lines extending in a first direction over said substrate;
a plurality of second lines extending across said first lines over said substrate;
a plurality of pixels defined by said first lines and said second lines;
a plurality of pixel electrodes provided at said pixels;
a plurality of switching elements provided at said pixels, each of said switching elements comprising at least one first thin film transistor;
a driver circuit formed over said substrate and electrically connected to said plurality of first lines, said driver circuit comprising a plurality of second thin film transistors, each of said first and second thin film transistors comprising:
a semiconductor film formed over said substrate having at least source, drain and channel regions;

a gate insulating film formed on said semiconductor film; and
a gate electrode over said channel region with the gate insulating film interposed therebetween,

wherein all of the first thin film transistors and the second thin film transistors are PTFTs.

23. The display device according to claim 22 wherein said display device is a liquid crystal device.

24. The display device according to claim 22 further comprising another driver circuit comprising IC chips electrically connected to said plurality of second lines.

25. The display device according to claim 22 wherein said semiconductor film contains oxygen at a concentration not higher than 7×10^{19} atoms/cm³.

26. A display device comprising:
a substrate having an insulating surface;
a plurality of first lines extending in a first direction over said substrate;
a plurality of second lines extending across said first lines over said substrate;
a plurality of pixels defined by said first lines and said second lines;
a plurality of pixel electrodes provided at said pixels;
a plurality of switching elements provided at said pixels, each of said switching elements comprising at least one first thin film transistor;
an interlayer insulating film comprising resin formed over said plurality of switching elements wherein said pixel electrodes are provided over said interlayer insulating film;

a driver circuit formed over said substrate and electrically connected to said plurality of first lines, said driver circuit comprising a plurality of second thin film transistors,

wherein all of the first thin film transistors and the second thin film transistors are PTFTs.

27. The display device according to claim 26 wherein said display device is a liquid crystal device.

28. The display device according to claim 26 further comprising another driver circuit comprising IC chips electrically connected to said plurality of second lines.

29. The display device according to claim 26 all of the first thin film transistors and the second thin film transistors are top-gate type.

30. The display device according to claim 26 wherein said first thin film transistor has a channel region comprising crystalline silicon having an oxygen concentration not higher than 7×10^{19} atoms/cm³.